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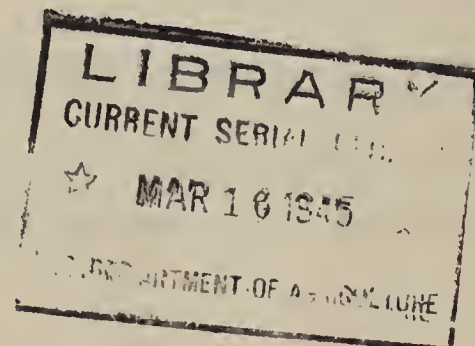
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Reserve

Materials Tested During 1943 in

The Division of Truck Crop and Garden Insect Investigations, to Determine Their Insecticidal Value, with Brief Notes on Results Obtained.

In order to give brief and indicative information upon the results of experiments to determine the insecticidal value of various materials tested during 1943 by workers in the Division of Truck Crop and Garden Insect Investigations, the following report has been prepared. This report has been assembled primarily for the information and guidance of the workers of this Division or their associates, and is not to be used for publication.



Division of Truck Crop and Garden Insect Investigations

Bureau of Entomology and Plant Quarantine

Agricultural Research Administration

U. S. Department of Agriculture.

FEB 3 1945

EXPLANATION

Quotation marks are used to designate trade names and names under which materials were purchased.

See list at end of table for index to "dispersants" and materials added to increase effectiveness, also to chemicals included under trade names.

Note: Tests were made in the laboratory or greenhouse except where "(F)" (= field tests) is given after the name of the state in which the tests were made.

Code

F = Field tests - small plots unless power sprayers or dusters are indicated under "Remarks".

N = Negative results - no further trials warranted against this insect although some effect may have been noted.

P = Positive results.

I = Results inadequate to judge N or P.

VP = Very promising.

R = Insecticide or mixture has been recommended.

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Material tested as insecticide	Name of insect used in test	Location of tests	Results (Code)	Remarks
1. Acetone semicarbazone	Tomato fruitworm	Ohio	N	Mixed with equal parts of talc.
2. Acetophenone semicarbazone	do.	do.	N	Mixed with equal parts of pyrophyllite.
Do.	Mexican bean beetle	do.	N	Do.
3. Aconitic acid	Citrus mealybug	Md.	I	Spray 4:100 caused injury
Do.	Red spider	do.	I	Do.
4. Aluminum fluoride	Pea weevil	Oreg.	N	Moderately toxic when not diluted.
Aluminum fluoride plus honey solution	do.	do.	P	56% control at 30 lb. rate.
5. p-Aminoacetanilide	Tomato fruitworm	Ohio	P	Mixed with equal parts of talc.
Do.	do.	Ohio (F)	N	Do.
6. p-Aminoazobenzene	Hornworms	N. C.	VP	Compared favorably with cryolite, less effective at low temperature.
7. p-Aminoazobenzene hydrochloride	do.	do.	VP	Do.
Do.	Tomato fruitworm	Ohio	N	Mixed with equal parts of talc.
8. 2-Amino-2-methyl-1,2-propanediol	Red spiders	Md.	I	Spray 4:100 caused injury.
Do.	Citrus mealybug	do.	I	Do.
9. Ammonium-4,6-dinitro-o-cresylate - Undiluted	Pea weevil	Oreg.	N	Toxic more effective than guanadine 4,6-dinitro-o-cresylate.
plus equal part talc	do.	Idaho	VP	Mortality 98%, irritating to nasal passages of operator.
10. Ammonium arsenite plus pyrophyllite 1:3	Potato flea beetles	Wash.	N	Repellant, excessive injury to foliage.
11. Ammonium sulfate	Pacific Coast wireworm	do.	I	Tested as repellant with various crops; no benefit.
12. Ammonium thiocyanate	do.	do.	N	Two dosages without soil, 3 periods of exposure.
13. Antimony arsenite plus pyrophyllite 1:3	Potato flea beetles	do.	P	No foliage injury, not repellant to adults.
14. "Arasan" (containing 50% of tetramethyl thiuran disulfide)	Sugar-beet wireworm	Calif. (F)	N	No value as wireworm repellant.
15. Arsenic disulfide plus honey solution	Pea weevil	Oreg.	N	19% mortality at 30 lb. rate.
16. Arsenic trisulfide	do.	do.	N	Ineffective as contact insecticide.



17. Azobenzene	Tomato fruitworm	Ohio	N	Mixed with equal parts pyrophyllite.
Do.	Mexican bean beetle	do.	P	Do.
Do.	Pea aphid	do.	N	Do.
18. Barbasco root (2.6% rotenone)	Mexican bean beetle	Md.	VP	Compared with cube containing 4 percent of rotenone
Do.	Pea aphid	Wiso.	VP	Results similar to those with derris diluted to same rotenone content. Also used with oil.
19. Barium carbonate	Tobacco hornworms	Fla. (F)	N	Dust.
20. Barium fluoride plus honey solution	Pea weevil	Oreg.	N	21% control at 30 lb. rate.
21. Barium fluosilicate (also see "Dutox")	Pea weevil	do.	N	
Do.	Tomato fruitworm	Ohio (F)	P	Comparable to cryolite, less effective than calcium arsenate.
Do.	Tobacco flea beetles	Fla. (F)	P	Dust caused slight injury.
Barium fluosilicate plus -				
Honey solution	Pea weevil	Oreg.	P	70 to 80% control at 30 lb. rate.
Talc (4:1)	Corn earworm	Va. (F)	VP	Power duster on beans.
Wheat middlings	Green June beetle	S. C. (F)	R	Used in sweetened bait.
Pyrophyllite	Cabbage caterpillars	do.	P	16 to 54 percent control.
Pyrophyllite	do.	do.	P	As effective as 50 percent strength of cryolite.
Pyrophyllite, sulfur, zinc oxide	Potato flea beetles	Wash. (F)	N	
22. "Basic copper arsenate"	Tobacco fleabeetles	S. C. (F)	VP	Spray 6 lb. to 100 gal.
Do.	do.	N. C. (F)	VP	Good protection to newly set plants when applied in plant bed.
Do.	Tobacco hornworms	S. C. (F)	VP	Spray 6 lb. to 100 gal.
Do.	Mexican bean beetle	Ohio (F)	VP	Spray 4 lb. to 100 gal. superior to 16% dust.
Do.	Colorado potato beetle	do.	VP	Knapsack duster, 16 percent strength.
Do.	Potato leafhopper	do.	VP	Experimental preparation, power sprayer to potatoes.
"Basic copper arsenate" plus -				
Sulfur (2:1)	do.	do.	N	Commercial preparation, hand dusters on beans and potatoes.
Cornmeal bait	Tomato fruitworm	do.	VP	Equal to or better than calcium arsenate in bait or dust.
Hydrated lime	do.	Va. (F)	P	Applied with power duster.
Wheat middlings	Green June beetle	S. C. (F)	N	Used in sweetened bait for larvae.
Honey solution	Pea weevil	Oreg. (F)	N	41 percent control at 30 lb. rate.
Cube	Tobacco flea beetle	S. C. (F)	VP	6 lbs. arsenate and 2 of cube per 50 gal.
23. Benzophenone semicarbazone	Mexican bean beetle	Ohio	N	Mixed with equal parts of pyrophyllite.
Do.	Tomato fruitworm	do.	N	Do.
24. m-Benzotoluide	do.	do.	N	Do.
Do.	Mexican bean beetle	do.	N	Do.

25.	n-Benzylbenzamide Do.	Mexican bean beetle Tomato fruitworm	Ohio do.	N N	Mixed with equal parts of pyrophyllite. Do.
26.	n-Benzylpropionamide	do.	do.	N	Do.
27.	"Black Leaf 10" (containing tobacco dust and 10 percent of nicotine alkaloid) "Black Leaf 10" plus - Talc 1:1 Talc 1:1 Derris and sulfur "Pyrocide"  "Pyrocide"  "Black Leaf 155" "Black Leaf 155" Cryolite  Cube, sulfur, "Vatsol O.S.", "Pyrax"  Derris, "Basi-Cop" and sulfur  Derris, "Basi-Cop" and sulfur Derris, "Basi-Cop" and sulfur "Lethane 60" Oil and pyrophyllite Derris and pyrophyllite  Pyrethrum marc Pyrethrum marc (2:3) Pyrethrum marc (2:3) Pyrethrum marc (2:3) Cube	Turnip aphid  Tobacco moth Cigarette beetle Turnip aphid do.  Cabbage caterpillars  Tobacco moth Cigarette beetle Corn earworm  Pea aphid  Potato aphid  Green peach aphid Buckthorn aphid Pea aphid do. do. do.  Mexican bean beetle do. Potato leafhopper Imported cabbageworm Mexican bean beetle	La. (F)  Va. do. La. (F) do.  do.  Va. do. do.  Wisc. (F)  Maine (F)  do. do. Wisc. do. do.  Ohio (F) Md. (F) do. Md. Va. (F)	VP  N N P P  P  N N VP  R  P  P P VP VP  N P VP P I	Dust containing 2, 3 and 4 percent nicotine.      0.15 percent of pyrethrins did not increase effectiveness. 2 percent nicotine increased effectiveness of "Pyrocide".  40% sodium fluoaluminate, 3% nicotine on beans. 1.8% nicotine, 0.375% rotenone, 10% sulfur, 1% "Vatsol". 2% nicotine, 0.375% rotenone, 7% copper, 10% sulfur and "Pyrax". Do. Do. Several mixtures tested with and without oil  Used with and without the addition of other materials. 2 percent of nicotine. 4 percent of nicotine. Do. Do. 3 percent nicotine, 0.25 percent rotenone.
28.	"Black Leaf 40" (40 percent solution of nicotine sulfate)  Do.  Do.  Do. Do. Do.  Do. "Black Leaf 40" plus - "Frinite"	Onion thrips  Pea aphid  Potato aphid  Green peach aphid Buckthorn aphid Onion thrips  Western flower thrips  Pea weevil	Calif. (F)  Wisc. (F)  Maine (F)  do. do. Utah (F)  Utah (F)  Oreg.	R  R  VP  VP VP P  P  N	Effect much improved with good wetting agent. 28 different mixtures tested in the greenhouse. Used in copper sprays and dusts on potatoes. Do. Do. Used with lime and pyrophyllite on tomatoes. Do. 85 lbs. of 3 percent dust not effective.

Sugar	Onion thrips	Calif. (F)	P	Effectiveness not increased by sugar.
Lime-sulfur	do.	do.	VP	Lime-sulfur controls onion mildew.
Mineral oil emulsion	do.	do.	VP	2 percent oil caused plant injury; ½ percent did not.
Beet molasses	do.	Idaho (F)	P	1 quart nicotine sulfate and 8 of molasses to 100 gal. water.
"Pyrocide" and lime	Pea weevil	do.	N	
Rotenone and lime	do.	do.	N	
"Pyrocide" and pyrophyllite	do.	do.	N	
Palustris sulfonate	Pea aphid	Wisc.	I	Used 0.5 percent
"Black Leaf 40" plus -				
"Pyrocide" and magnesium oxide	Pea weevil	Idaho	N	
Mineral oil	Turnip aphid	La.	P	Stunted plants.
Soap	do.	La. (F)	VP	Stunted plants.
Apple sirup	Onion thrips and gladiolus thrips	Mt. (F)	N	
Beet molasses	do.	do.	VP	As effective as tartar emetic-brown sugar mixture.
Blackstrap molasses	do.	do.	P	Better control at 2 qt. per 100 gal. water than at 4.
Brown sugar	do.	do.	P	
Cane sugar	do.	do.	VP	Superior to brown sugar against onion thrips.
Cane sirup	do.	do.	P	
Corn molasses	do.	do.	VP	Nearly as effective as tartar emetic- brown sugar.
Corn sirup	do.	do.	VP	As effective as tartar emetic-brown sugar.
Corn sugar	do.	do.	P	Inferior to other sugars against onion thrips.
"Deo-Base oil" and soap	do.	do.	N	Reduced yield of onions; injured gladiolus foliage.
Grasselli spreader	do.	do.	P	Inferior to nicotine-sugar mixtures.
Honey	do.	do.	VP	
Hydrated lime	do.	do.	P	As dust; inferior to nicotine-sugar sprays.
Dark "Karo" sirup	do.	do.	P	Inferior to pure corn sirup.
Soap powder	do.	do.	P	Inferior to the better nicotine-sugar sprays.
Sorghum sirup	do.	do.	VP	
"Freon 12" (aerosol)	Green peach aphid	Mt.	VP	More efficient than combustible powder.
Lime, pyrophyllite and derris	Pea aphid	Wisc. (F)	P	
Calcium arsenate	Onion thrips	Utah (F)	P	2 percent nicotine; 50 percent calcium arsenate.
Calcium arsenate	Western flower thrips	Utah (F)	P	Do.
29. "Black Leaf 155" (containing 14 percent of nicotine as nicotine bentonite)	Cabbage looper	S. C. (F)	N	
Do.	Imported cabbageworm	do.	P	61 percent control.
Do.	Diamondback moth	do.	P	78 percent control.
"Black Leaf 155" plus -				
"Pyrocide"	Cabbage caterpillars	La. (F)	P	2 percent nicotine increased effective- ness in spring.



Lime	Turnip aphid	La. (F)	P	2, 3 and 4 percent nicotine promising.
Sulfur and derris	Cabbage caterpillars	do.	P	2 percent nicotine, 25 percent sulfur.
Lime	do.	do.	P	Dust 3 percent, not promising.
Powdered sugar	do.	do.	P	Dust 3 percent nicotine and 5 of sugar not promising.
Pyrethrum marc	Mexican bean beetle	Ohio (F)	N	2 percent nicotine applied with knapsack duster.
Pyrethrum marc (2:3)	do.	Md. (F)	P	Dust.
Pyrethrum marc (2:3)	Potato leafhopper	do.	VP	Do.
Pyrethrum marc (2:3)	Imported cabbageworm	do.	VP	Do.
Nicotine alkaloid	Pea aphid	Wisc.	N	2 percent of alkaloid and 10 percent of "Black Leaf 155".
30. Black pepper (containing piperine)	Green peach aphid	Md.	N	Tested as a dust and as a spray 4 lbs. per 100 gals. water.
Do.	Red spiders	do.	N	Do.
Do.	Onion thrips	do.	N	Do.
Do.	Greenhouse whitefly	do.	N	Do.
Do.	Onion thrips	Md. (F)	N	Do.
Do.	Potato flea beetles	Md.	I	
Do.	Pea weevil	Oreg.	N	Slight toxicity but too low to be considered.
Do.	Mexican bean beetle	Ohio	N	Dust.
Do.	Pea aphid	do.	N	
Do.	Pea weevil	Idaho	N	
Black pepper plus magnesium oxide	do.	do.	N	
Black pepper plus "Pyrocide"	do.	do.	N	
31. Black walnut ( <u>Juglans nigra</u> L.) acetone extract of husks	Beet leafhopper	do.	N	2 gal. extract and 2 qts. "Penetrol" per 100 gal. spray.
32. "Blue Grass Dust" (containing 0.25% of rotenone and 1.13% of "Lethane 60")	Mexican bean beetle	Ohio	P	Poor control; also see "Unico dust no. 122".
33. Bordeaux mixture	Pea weevil	Oreg.	N	Ineffective with and without honey solution.
Do.	Potato leafhopper	Ohio	VP	Spray 4-6-50 on beans and potatoes; power sprayer.
34. Boric acid	Pacific Coast wireworm	Wash.	N	Tested as repellant, detrimental to crop growth.
35. m-Bromoacetanilide	Mexican bean beetle	Ohio	P	Dust mixed with equal parts of pyrophyllite.
Do.	Tomato fruitworm	do.	N	Do.
Do.	Pea aphid	do.	P	Do.
36. p-Bromoacetanilide	do.	do.	N	Do.
Do.	Mexican bean beetle	do.	P	Do.
Do.	Tomato fruitworm	do.	N	Do.

37. p-Bromo-n-ethylbenzenesulfonamide	Tomato fruitworm	Ohio	P	Dust mixed with equal parts of pyrophyllite.
Do.	Mexican bean beetle	do.	P	Do.
38. Calcium arsenate	Pea weevil	Oreg. (F)	N	50 percent control but injured pea vines.
Do.	Tomato fruitworm	Utah (F)	R	
Do.	do.	Ohio (F)	R	
Do.	do.	Calif. (F)	R	On tomatoes.
Do.	Cabbage caterpillars	La. (F)	R	
Do.	Diamondback moth	S. C. (F)	R	Fairly effective.
Do.	Imported cabbageworm	do.	P	Not very effective.
Do.	Cabbage looper	do.	P	Do.
Do.	Sweetpotato weevil	La. (F)	P	Dust caused severe foliage injury.
Do.	Tobacco flea beetle	N. C. (F)	P	In plant bed mixed with sprays for blue mold.
Calcium arsenate plus -				
Paris green (7½ percent)	Tomato fruitworm	Calif. (F)	VP	On tomatoes.
Cryolite (1:1)	do.	do.	VP	Do.
Cornmeal (1:9)	do.	do.	VP	Do.
Honey solution	Pea weevil	Oreg.	P	82 to 97% control at 30 lb. rate.
Honey solution	do.	Oreg. (F)	N	Field tests disappointing and erratic.
Magnesium oxide	do.	Idaho	N	
"Pyrocide"	do.	do.	N	
Cryolite	Sweetpotato weevil	La. (F)	P	Inferior to calcium arsenate undiluted.
Pyrophyllite	Potato flea beetles	Wash. (F)	VP	
Diatomaceous earth	do.	do.	VP	
Bordeaux	do.	do.	P	Less effective than 25 percent calcium arsenate.
Monohydrated copper sulfate, lime and pyrophyllite	do.	do.	P	12.5 percent calcium arsenate, 17.5 percent cryolite. Less effective than same strength with inert diluent.
Timbo	do.	do.	VP	25 percent calcium arsenate, 0.5 percent rotenone less effective than cryolite-oil dust.
39. Calcium arsenite plus pyrophyllite	do.	Wash.	P	25 percent dust repellant to adults and injurious to foliage.
40. Calcium chromate	Pea weevil	Oreg.	N	
41. Calcium cyanide	Sugar-beet wireworm	Calif. (F)	P	High mortality in bait rows but wireworms between bait rows damaged lima beans.
42. Calcium fluoride	Pea weevil	Oreg.	N	Ineffective with or without sweetened bait.
43. "Calcium fluosilicate compound"	do.	do.	N	Ineffective.
"Calcium fluosilicate compound" plus-honey solution	do.	do.	P	84 percent control at 30 lb. rate.

44.	"Calgreen" containing calcium arsenate and paris green "Calgreen" plus honey solution	Pea weevil do.	Oreg. do.	N P	90 percent control at 30 lb. rate.
45.	Carbon disulfide Do. Do. Do.	Sugar-beet wireworm Pacific Coast wireworm do. Green June beetle	Calif. (F) Wash. Wash. (F) Tenn. (F)	I VP I VP	Used in bait rows. Used as repellant. Used as emulsion, very effective but expensive.
46.	m-Chloroacetanilide Do. Do.	Mexican bean beetle Tomato fruitworm Pea aphid	Ohio do. do.	N N N	Dust mixed with equal parts of pyrophyllite. Do. Do.
47.	o-Chloroacetanilide Do. Do.	Mexican bean beetle Tomato fruitworm Pea aphid	do. do. do.	N N N	Do. Do. Do.
48.	p-Chloroacetanilide Do. Do.	Mexican bean beetle Pea aphid Tomato fruitworm	do. do. do.	N N N	Do. Do. Do.
49.	Chloroamine-B Do. Do.	Red spider Citrus mealybug Pacific Coast wireworm	Md. do. Wash.	I I N	Spray 4 lbs. to 100 gal. caused injury. Do. Two strengths with and without soil.
50.	2-Chlorofluorene (20 percent) Do. Do.  Do. Do.  Do. Do. Do. Do. Do. Do.  Do. Do. Do. Do. Do. Do. Do. Do. Do.	Say stinkbug <u>Lygus</u> spp. Beet leafhopper  Pepper weevil Cross-striped cabbageworm Harlequin bug Imported cabbageworm Southern green stinkbug Squash bug Imported cabbageworm Red spiders  Green peach aphid Pea aphid Mexican bean beetle Tomato fruitworm do. Pea weevil Cabbage looper Imported cabbageworm Diamondback moth Potato flea beetles	Ariz. do. Calif.  do.  La. do. do. do. do. La. (F) Md.  do. Ohio do. do. Ohio (F) Oreg. S. C. (F) do. do. Wash. (F)	P VP N  VP P P P P N I  I P P P N N N N N I	Some plants may be injured. Heavy application caused slight plant injury. 10 percent strength much less effective.         As spray 4 lbs. to 100 gal. water caused injury. Do. Dust Do. Do. Do. 53 percent control at 30 lb. rate. 17 percent control.  Caused severe foliage injury to potatoes.



51.	2 Chloro- 6-nitrotoluene	Tomato fruitworm	Ohio	N	Dust mixed with equal parts of talc.
52.	Chromium fluoride	Pea weevil	Oreg.	N	
	Chromium fluoride plus honey solution	do.	do.	P	81 percent control with 30 lb. application.
53.	"Coposil" (essentially copper silicate)	Potato leafhopper	Ohio (F)	N	Applied with power sprayer on beans and potatoes.
54.	"Copper arsenate"	Sweetpotato weevil	La. (F)	N	Inferior to calcium arsenate.
	"Copper arsenate" plus -	do.	La.	P	
	Fresh sweetpotato as bait	Potato flea beetles	Wash.	P	No foliage injury; repellant to adults.
	Pyrophyllite (1:3)	Tomato fruitworm	Calif. (F)	VP	On tomatoes.
	Cornmeal (1:9)				
55.	"Copper carbonate"	Pea weevil	Oreg.	N	100 percent control at 170 lb. rate at low humidity but ineffective at 30 lb. rate.
56.	Copper oxychloride	Potato leafhopper	Ohio (F)	N	Applied with power sprayers to beans and potatoes.
57.	"Copper oxychloride sulfate"	do.	do.	P	Do.
58.	"Copper sulfate, basic"	Potato leafhopper	Ohio (F)	VP	Applied with power sprayer to beans and potatoes; commercial product, however, was not effective.
59.	"Copper sulfate, tribasic"	do.	Ohio (F)	N	Power sprayer on beans and potatoes.
	Cracca, see <u>Tephrosia virginiana</u>				
60.	Cryolite	Tomato fruitworm	Calif. (F)	R	Diluted with talc. pyrophyllite or sulfur to contain 70 percent of sodium fluoaluminate.
	Do.	do.	Ohio (F)	R	
	Do.	do.	Utah (F)	R	
	Do.	Hornworms	N. C., S. C. (F)	R	Effective as a spray 12 lbs. per 100 gal. water.
	Do.	do.	Tenn. (F)	P	Dust effective if applied in large quantities.
	Do.	Tobacco flea beetle	Fla., N.C. (F)	R	Effective as a dust, 70 to 80 percent sodium fluoaluminate.
	Do.	do.	S. C. (F)	R	Effective as a dust, poor as a spray.
	Do.	Pea weevil	Idaho	P	
	Do.	do.	Idaho (F)	VP	Effective when used undiluted at 27 lbs. per acre.
	Do.	do.	Oreg. (F)	P	73 percent control at 20 to 30 lbs. per acre.
	Do.	Sweetpotato weevil	La. (F)	N	
	Do.	Sweetpotato leaf roller	La. (F)	I	



Cryolite	Mexican bean beetle	Md. (F)	R	4 lbs. per 100 gal. water very promising.
Do.	do.	Ohio (F)	R	
Do.	do.	Va. (F)	R	
Do.	Potato flea beetles	Wash. (F)	R	
Do.	Cabbage caterpillars	S.C., La. (F)	R	
Cryolite plus -				
Calcium arsenate (1:1)	Tomato fruitworm	Calif. (F)	VP	On tomatoes.
Cornmeal (1:4)	do.	do.	VP	Do.
Cornmeal (1:9)	do.	do.	R	Do.
Cornmeal (1:19)	do.	do.	VP	Do.
Cornmeal (1:49)	do.	do.	N	Do.
Lead arsenate (1:1)	do.	do.	VP	Do.
Nicotine	Tobacco flea beetle	Fla. (F)	I	Dust.
Cube	do.	do.	I	
Pyrethrum	do.	do.	I	
Pyrophyllite (1:1)	Pea weevil	Idaho (F)	P	
"DN-111" (1:1)	do.	Idaho	N	Less effective than "DN-111" without cryolite.
"DN-111" plus Mg O	do.	do.	N	
Dinitro-o-cyclohexyl phenol	do.	do.	N	Mixture also contained 50 percent magnesium oxide.
"Lethane 384"	do.	do.	N	Contained 45 percent "Alorco" cryolite and 1½ percent "Lethane."
Magnesium oxide (1:1)	do.	do.	I	
"Pyrocide" and Mg O	do.	do.	P	45 percent "Alorco" cryolite and 0.1 percent pyrethrins.
"Pyrocide" and pyrophyllite	do.	do.	P	Do.
Pyrophyllite (1:1)	Potato flea beetle	Md.	VP	
Pyrophyllite (1:1)	Colorado potato beetle	Md. (F)	VP	
Phenothiazine	Tomato fruitworm	Ohio (F)	N	No more effective than cryolite alone.
Honey solution	Pea weevil	Oreg.	N	35 to 60 percent control.
Mineral oil (Gulf no. 371)	Cabbage caterpillars	S. C. (F)	P	
Cornmeal (1:10)	Agrotinae	S. C. (F)	R	
Pyrophyllite (1:1)	Cabbage caterpillars	do.	R.	
Cube	Tobacco flea beetle	do.	VP	6 lbs. cryolite and 2 lbs. cube per 50 gal. water.
Phenothiazine	Corn earworm	Va. (F)	P	40 percent sodium fluoaluminate and 10 percent phenothiazine; on beans.
"DN Dust D-8"	Potato flea beetles	Wash. (F)	N	31.5 percent sodium fluoaluminate and 65 percent "DN-8".
Cryolite plus -				
Gashouse sulfur	do.	do.	P	
Sulfur and zinc oxide	do.	do.	N	
Oil and pyrophyllite	do.	do.	VP	31.5 percent sodium fluoaluminate and 4 percent sesame oil.
Wettable sulfur and diatomaceous earth	do.	do.	N	31.5 percent sodium fluoaluminate and 57 percent sulfur.
Wheat middlings	Green June beetle	S. C. (F)	N	23 to 49 percent control at several strengths.
61. "Crystox", (di(trimethylcyclohexenone))	Pea weevil	Oreg.	N	90 percent dust gave very low mortality.

"Crystox", (di(trimethylcyclohexanone))	Pea aphid	Wisc.	N	Very low mortality.
"Crystox" plus cube	Mexican bean beetle	Ohio (F)	N	Knapsack duster 0.2% "Crystox" and 3% rotenone.
62. Cube (ground roots containing rotenone)	Tobacco flea beetle	Fla. (F)	R	
Do	do	N. C. (F)	R	Dust used as a standard of comparison.
Do.	Pea weevil	Idaho (F)	R	Do.
Do.	Mexican bean beetle	Ohio (F) Va. (F)	R	
Do.	Tobacco flea beetle	S. C. (F)	R	2 lbs. of 4 percent rotenone per 50 gal. water.
Do.	Cabbage caterpillars	do.	R	
Do.	Tomato fruitworm	Ohio	N	Dust.
Do.	Colorado potato beetle	Ohio (F)	VP	Knapsack dusters ; 0.5 percent rotenone.
Cube plus-				
"Lethane 60"	Tobacco hornworm	Fla. (F)	P	Dust mixtures containing 0.5 to 1.0 percent of rotenone and 1 percent of "Lethane".
Nicotine sulfate	Pea weevil	Idaho	N	1.2 percent mortality; 0.25 percent of rotenone; 4 percent nicotine.
"Crystox"	Mexican bean beetle	Ohio (F)	N	Knapsack dusters 0.3 percent rotenone 0.2 percent "Crystox".
"Fermate"	do.	do.	N	Knapsack dusters 0.3 percent rotenone 7.5 percent "Fermate".
Nicotine	do.	do.	N	Knapsack dusters.
Phenoxathiin	do.	do.	N	Knapsack dusters 0.3 percent rotenone 0.2 percent phenoxathiin.
Light mineral oil	Cabbage looper	S. C. (F)	R	Increased control by adding 2 percent of oil.
Do.	Imported cabbageworm	do.	R	Do.
Wheat middlings	Green June beetle	S. C. (F)	N	
Cryolite	Tobacco flea beetle	do.	VP	6 lbs. cryolite and 2 lbs. of 4 percent rotenone per 50 gal. water.
"Basic copper arsenate"	do.	do.	VP	6 lbs. of the arsenate and 2 lbs. of cube per 50 gal. water.
Cottonseed meal	Mexican bean beetle	Va. (F)	VP	0.25 percent rotenone, 3 percent meal; hand duster.
Peanut flour	do.	do.	VP	0.25 percent rotenone, 3 percent peanut flour.
"Vatsol OS"	do.	do.	I	0.25 percent rotenone, 1 percent "Vatsol OS".
Nicotine alkaloid	do.	do.	I	0.25 percent rotenone, 3 percent nicotine from "Black Leaf 10".
Soybean flour	do.	do.	N	0.25 percent rotenone, 3 percent soybean flour.
Dried blood	do.	do.	N	0.25 percent rotenone, 3 percent dried blood.
"Black Leaf 10" and sulfur	Pea aphid	Wisc. (F)	R	
Oil plus sulfur	Cabbage caterpillars	S. C. (F)	VP	Some foliage injury when 20 percent sulfur was included.
2% "Lethane 60"	do.	do.	P	"Lethane" improved mixture but no more than did mineral oil.
"Velsicol AR 60"	do.	do.	N	"Velsicol" did not increase effectiveness.

63.	Cube extract on various carriers	Tomato fruitworm	Ohio (F)	P	Compared with ground cube from which extract was prepared; 0.3 percent rotenone; gave almost equal control; carriers included pyrophyllite, walnut shell flour, and sulfur.
	Cube extract plus "Indalone" (alpha, alpha-dimethyl-alpha-carbobutoxydihydro-gamma-pryone)	Cabbage caterpillars	S. C. (F)	P	
64.	Cyclohexanone plus chlorethane (as aerosol in "Freon 12")	Onion thrips	Md.	VP	
	Do.	Green peach aphid	do.	VP	
	Do.	Mexican bean beetle	do.	VP	
	Do.	Greenhouse whitefly	do.	VP	
65.	Cyclopentanone semicarbazone	Mexican bean beetle	Ohio	N	Dust mixed with equal parts of pyrophyllite.
	Do.	Tomato fruitworm	do.	N	Do.
66.	n-Cyclohexylpyromucamide	Mexican bean beetle	do.	P	Do.
	Do.	Tomato fruitworm	do.	N	Do.
67.	DD mixture	Green June beetle	S. C. (F)	VP	Soil treatment
	Do.	Pacific Coast wireworm	Wash.	VP	
	Do.	Sugar-beet wireworm	Calif. (F)	VP	2 ml. in 2 gal. water per sq. ft. of soil gave complete mortality at depth of 20 in. No injury to lima beans, sugar-beets, tomatoes, cabbage, corn and yams planted 7 to 14 days after treatment of soil.
68.	DDT plus pyrophyllite (See "Gesarol")	Say stinkbug	Ariz.	VP	10 percent strength, no plant injury.
	Do.	<u>Lygus</u> spp.	do.	VP	Do.
	Do.	Sugar-beet wireworm	Calif.	I	12 gm. of 10 percent mixture to 10 lbs. of soil not effective.
	Do.	Cabbage caterpillars	La. (F)	VP	10 percent dust practically 100 percent effective.
	Do.	Cross-striped cabbageworm	La.	P	10 percent dust.
	Do.	Harlequin bug	do.	P	Do.
	Do.	Imported cabbageworm	do.	P	Do.
	Do.	Southern green stinkbug	do.	P	Do.
	Do.	Squash bug	do.	P	Do.
	Do.	Turnip aphid	La. (F) Ohio (F)	P	Do.
	Do.	Cabbage looper	S. C. (F)	VP	10 percent strength superior to 0.5 percent rotenone.
	Do.	Imported cabbageworm	do.	VP	Do.
	Do.	Cabbage webworm	do.	VP	Do.
	Do.	Pacific Coast wireworm	Wash.	I	Several strengths and methods used, not promising.
	Do.	Pea aphid	Wisc.	VP	Several strengths with and without oil, high residual effect.
	Do.	Mexican bean beetle	Ohio (F)	N	10 percent DDT applied with knapsack dusters.



DDT plus pyrophyllite (See "Gesarol")	Mexican bean beetle	Ohio	N	Strengths from 0.8 to 10 percent DDT.
Do.	Pea weevil	Idaho	N	
Do.	Pea aphid	Ohio	VP	Strengths from 0.8 to 10 percent DDT.
Do.	Tomato fruitworm	Ohio (F)	VP	1 percent DDT as effective as calcium arsenate. 3 percent more effective.
DDT plus dibutyl pthalate, sesame oil and "Freon 12"	Cabbage aphid	Md. (F)	VP	As aerosol caused oil-stained plants.
Do.	Potato aphid	do.	VP	Do.
Do.	Mexican bean beetle	do.	VP	Do.
DDT plus clay and sulfur	Potato leafhopper	Ohio (F)	VP	1 percent DDT, 80 percent sulfur on beans and potatoes; hand dusters.
DDT plus methyl chloride (as aerosol)	Red spiders	Md.	P	2 percent DDT on radish and bean.
Do.	Green peach aphid	do.	VP	2 percent DDT on radish.
Do.	Citrus mealybug	do.	P	2 percent DDT on coleus.
DDT plus methyl chloride and ortho-dichlorobenzene	do.	do.	P	As an aerosol; 2 percent DDT; 4 percent orthodichlorobenzene.
Do.	Green peach aphid	do.	VP	Do.
DDT in soybean oil plus cornmeal	Cricket ( <u>Gryllodes</u> <u>digilatus</u> )	Md.	VP	Commercial scale greenhouse application.
Do.	American cockroach	do.	VP	Do.
Do.	Australian cockroach	do.	VP	Do.
DDT in refined kerosene oil	Tobacco moth	Va.	VP	3-10 percent DDT, remarkable residual effect.
Do.	Cigarette beetle	do	VP	3-10 percent DDT; 3 percent was more effective than 0.2 percent pyrethrins in oil.
DDT plus "Deo-Base" oil and soap in water	Onion thrips	Md. (F)	N	
Do.	Gladiolus thrips	do.	N	Severe injury to gladiolus.
69. "Deo-Base" oil plus soap and water	Onion thrips	Md.	N	4 gal. oil and 8 lbs. soap per 100 gal. spray.
70. <u>Derris elliptica</u> (Also see rotenone)	Pea weevil	Idaho (F)	R	Compared with <u>Derris malaccensis</u> .
Do.	Mexican bean beetle	Ohio (F)	R	Similar control with micronized and unmiconized sample.
Do.	Cabbage caterpillars	S. C. (F)	R	Compared with <u>Derris malaccensis</u> .
Do.	Tobacco flea beetle	N. C.	R	Do.
Do.	do.	Fla. (F)	R	Used as standard of comparison.
Do.	Cabbage caterpillars	La. (F)	R	
Do.	Cross-striped cabbage-worm	La.	P	
Do.	Harlequin bug	do.	P	
Do.	Imported cabbageworm	do.	R	
Do.	Southern green stinkbug	do.	P	
Do.	Squash bug	do.	P	
Do.	Turnip aphid	La. (F)	R	
Do.	Mexican bean beetle	Va. (F)	R	
<u>Derris elliptica</u> plus -				
Light magnesium oxide	do.	Ohio	N	Dust.
Heavy magnesium oxide	do.	do.	N	Do.
Titanium dioxide	do.	do.	N	Do.



<u>Derris elliptica</u> plus -					
Zinc oxide	Mexican bean beetle	Ohio	N	Dust.	
Anhydrous magnesium perchlorate	do.	do.	N	Do.	
"Fermate"	Cabbage caterpillars	La. (F)	N	7 1/2% "Fermate" did not increase effectiveness.	
"Black Leaf 155" and sulfur	do.	do.	P		
Mineral oil	do.	do.	P	2% oil tended to increase effectiveness.	
Pyrethrum	do.	do.	VP		
"Lethane 60"	do.	do.	P		
"Black Leaf 10" and sulfur	Turnip aphid	do.	P		
Mineral oil	do.	do.	P	1 percent oil.	
"Lethane 60"	do.	do.	P	Effectiveness proportional to rotenone content.	
"Black Leaf 40", lime, pyrophyllite	Pea aphid	Wisc. (F)	P		
"Black Leaf 10", sulfur "Vatsol OS" and pyrophyllite	do.	do.	P		
Yam bean	do.	Wisc.	N		
Oleric acid	do.	do.	VP		
"Corvus oil" and talc	do.	Wisc. (F)	R	Seven strengths tested.	
"Black Leaf 40"	do.	Wisc.	P		
"Shell smudge oil"	do.	do.	VP		
Soybean oil	do.	do.	R		
"Corvus oil" and pyrophyllite	do.	Wisc. (F)	R		
"Lethane 60", "Corvus oil" and pyrophyllite	do.	do.	R		
71. <u>Derris malaccensis</u> plus pyrophyllite	Pea weevil	Idaho (F)	P	Apparently more effective than <u>D. elliptica</u> when diluted to same rotenone.	
Do.	Mexican bean beetle	Ohio	VP	Do.	
Do.	do.	Ohio (F)	VP	Do.	
Do.	Pea aphid	Ohio	VP	Do.	
Do.	Cabbage looper	S. C.	P	Do.	
Do.	Imported cabbageworm	do.	P	Do.	
Do.	Tobacco flea beetle	N. C.	I	Do.	
72. <u>Derris</u> resins plus oil and talc	Tomato fruitworm	Ohio	N		
Do.	Pea aphid	do.	P		
Do.	Mexican bean beetle	do.	P		
Do.	Pea aphid	Wisc.	P		
<u>Derris</u> resins plus oil, talc and 0.75% phenoxathiin	Tomato fruitworm	Ohio	N		
Do.	Pea aphid	do.	P		
Do.	Mexican bean beetle	do.	P		
Do.	Pea aphid	Wisc.	N		
Do.	Pea weevil	Idaho	N		
<u>Derris</u> resins in acetone plus sugar	Onion thrips	Calif. (F)	P		
73. Diatomaceous earth	Pea weevil	Oreg.	P	88 percent mortality in laboratory tests.	
74. Dichloroethyl ether	Corn earworm	Calif. (F)	P	In oil on sweet corn.	
Do.	Sugar-beet wireworm	Calif. (F)	I	Effective in bait rows but decreased germination of beans planted later.	

Dichloroethyl ether	Pacific Coast wireworm	Wash. (F)	P	As repellant with various crops; very detrimental to many seeds.
Do.	Corn root webworm	Tenn. (F)	I	Applied to soil surrounding newly set tobacco plants.
Dichloroethyl ether plus - Methyl bromide (4:1)	Sugar-beet wireworm	Calif. (F)	I	Effective but affected germination of lima beans.
Methyl bromide (5%) and pumice	do.	do.	P	Applied in pellet form at time of planting beans; injury.
"Celite" and methyl bromide	do.	do.	N	Ineffective as repellant dusted on seed.
"Celite" and methyl iodide	do.	do.	N	Do.
Mica, methyl bromide and styrene	do.	do.	N	Applied as repellant in pellet form at time of seeding; beans rotted.
75. Dimethylacridan	Tomato fruitworm	Ohio (F)	N	Dust mixed with equal parts of pyrophyllite.
76. "Dinitrox" (dinitro-o-cresol)	Say stinkbug	Ariz.	VP	Dust 1 percent, severe burning may occur.
Do.	<u>Lygus</u> spp.	do.	VP	Do.
77. Dinitro-o-cresol ( 2 percent)	Pea weevil	Idaho	N	
78. 4,6-Dinitro-o-cresol acetate	Tomato fruitworm	Ohio	P	Mixed with equal parts of talc.
Do.	Pea aphid	do.	P	Do.
79. 4,6-Dinitro-o-cresol methyl ether	do.	do.	P	Do.
Do.	Tomato fruitworm	do.	P	Do.
80. Dinitro-o-cyclohexyl phenol	Pea weevil	Idaho	N	
Dinitro-o-cyclohexyl phenol plus sulfur	Potato leafhopper	Ohio (F)	VP	1 percent strength with 50 percent sulfur and 49 percent "Pyrax".
Dinitro-o-cyclohexyl phenol plus pyrethrum	do.	do.	VP	1 percent active "DN", 0.025 percent of pyrethrins and 49 percent "Pyrax".
81. Dinitro-o-cyclohexyl phenol, dicyclohexylamine salt of	Pea weevil	Idaho	N	Dry mix 40% active ingredient.
82. Dinitro-o-cyclohexyl phenol, Calcium salt of	do.	do.	N	
83. 4,6-Dinitro-o-tolyl acetate	Say stinkbug	Ariz.	N	Dust 1 percent.
Do.	<u>Lygus</u> spp.	do.	N	Do.
84. 1-4 Diphenyl semicarbazide	Mexican bean beetle	Ohio (F)	N	As dust 16 percent and as spray 4 lbs. per 100 gal. water.
Do.	Tomato fruitworm	do.	P	Dust mixed with equal parts of talc.
Do.	Colorado potato beetle	do.	N	16 percent dust applied by knapsack dusters.
85. "DN-Dust" (1 percent dinitro-o-cyclohexyl phenol)	Say stinkbug	Ariz.	VP	Some plants may be injured.
Do.	<u>Lygus</u> spp.	do.	N	

86.	"DN Dust D-8" (containing 1.7 percent dicyclohexylamine salt of dinitro-o-cyclohexyl phenol and 2% mineral oil)	Pea weevil	Oreg	N	
	"DN Dust D-8" plus cryolite	Potato flea beetles	Wash. (F)	N	31.5% sodium fluoaluminate and 65% "DN Dust D-8"
87.	"DN Dust D-4 (containing 1.7% of dicyclohexyl amino salt of dinitro-o-cyclohexyl phenol)	Red spiders	Calif. (F)	VP	On lima beans. More expensive and less effective than sulfur.
	Do.	Tomato russet mite	do.	P	Used on tomatoes.
	Do.	Onion thrips	Md. (F)	N	Injured onion foliage and gave poor control.
	Do.	Gladiolus thrips	do.	N	Poor control of thrips.
	Do.	Pea weevil	Idaho	N	
88.	"DN-111" (containing 20 percent of dicyclohexyl amine salt of dinitro-o-cyclohexyl phenol)	Pea weevil	Idaho (F)	VP	Compared favorably with 0.5 percent rotenone; foliage injury.
	"DN-111" (containing 20 percent of dicyclohexyl amine salt of dinitro-o-cyclohexyl phenol)	do.	Idaho	VP	
	Do.	Onion thrips	Calif.	VP	Serious plant injury.
	Do.	do.	Md. (F)	N	Injured onion foliage; poor control.
	Do.	Gladiolus thrips	do.	N	Poor control of thrips.
	Do.	Colorado potato beetle	Ohio (F)	P	Knapsack duster; 16 percent dust.
	DN-111 plus -				
	Cryolite (1:1)	Pea weevil	Idaho	N	
	Pyrethrum	do.	do.	VP	0.1% pyrethrins increased the effectiveness of DN.
	Brown sugar	Onion thrips	Md. (F)	N	Injured onion foliage; poor control.
	Brown sugar	Gladiolus thrips	do.	N	Poor control of thrips.
	"Friarite"	Pea weevil	Oreg. (F)	N	1% dust; some injury to peas.
	Honey solution	do.	Oreg.	N	
	Magnesium oxide and "Friarite"	do.	do.	N	
	Cryolite and magnesium oxide	do.	Idaho	N	
89.	"DN Sulfur Dust No. 10" (containing 1% dinitro-o-cyclohexyl phenol and 99% sulfur)	do.	do.	P	
90.	"Dutox" (chiefly barium fluosilicate with small quantity of sodium fluoaluminate)	Tomato fruitworm	Ohio (F)	P	As effective as cryolite, less effective than calcium arsenate.
	"Dutox" plus -				
	Talc (4:1)	do.	Va. (F)	VP	Power duster.
	Pyrophyllite	Potato flea beetles	Wash. (F)	P	25 percent barium fluosilicate less effective than 25 percent calcium arsenate.
	Zinc oxide, pyrophyllite and sulfur	do.	do.	N	Less effective than "Dutox" plus pyrophyllite.



91.	"Endopest" (reported as containing 4% nicotine alkaloid, 2.1% dichloroethyl ether, 27% sodium fluoaluminate 2.65% copper as metallic and 15% of sulfur) Do.	Mexican bean beetle Corn earworm	Va. (F) do.	P P	Power duster. On beans with power duster.
92.	"Ethide" (or 1,1-dichloro 1 nitroethane) Do.	Pacific Coast wireworm do.	Wash. Wash. (F)	VP P	24 strengths tested at 3 temperatures and 3 moisture conditions. As repellant with various crops; stimulates seeds; detrimental to some plants.
93.	Ethylene dichloride Do. Do.	Mole crickets Sugar-beet wireworm Green June beetle	Fla. (F) Calif. (F) Tenn. (F)	I N P	Ineffective on wireworms in bait rows. Emulsion used in soil of tobacco plant beds to kill larvae.
	Ethylene dichloride plus methyl bromide (9:1)	Sugar-beet wireworm	Calif. (F)	N	67% mortality in bait rows; some evidence of repellence.
94.	Ethyl methyl ketone semicarbazone Do.	Mexican bean beetle Tomato fruitworm	Ohio do.	N N	Dust mixed with equal parts pyrophyllite. Do.
95.	"Fermate" (containing 70 percent of ferric dimethyl dithiocarbamate) Do. Do. Do.	Sugar-beet wireworm Tobacco flea beetle Vegetable weevil Mexican bean beetle	Calif. Fla. Fla. (F) Ohio (F)	N N N P	Of no value as a wireworm repellant. Dust. As spray 1.5 lbs. per 100 gals. water. Knapsack and power sprayer; 4 lbs. per 100 gal. water.
	"Fermate" plus - Cube	do.	do.	N	Inclusion of 7.5 percent "Fermate" did not increase effectiveness of cube dust; knapsack duster.
	Derris	Cabbage caterpillars	La. (F)	N	7.5 percent "Fermate" did not increase effectiveness of rotenone.
	"IN-5052-A25"	Mexican bean beetle	Ohio (F)	N	Power sprayer 2 lb. "Fermate" per 100 gal. 0.015% "IN-5052-A25"; also knapsack duster 7.5% and 5%.
96.	"Frianite" (volcanic ash)	Pea weevil	Oreg.	N	30 percent mortality at 130 lbs. per acre.
97.	2-Furanacrylamide Do.	Mexican bean beetle Tomato fruitworm	Ohio do.	N N	Dust mixed with equal parts of pyrophyllite. Do.
98.	Gasolene Do.	Green June beetle do.	S. C. Tenn. (F)	I VP	Caused plant injury in greenhouse test. Used in soil of tobacco plant beds to kill larvae. No plant injury when applied 2 in. below soil surface.

Gelsenium sempervirens, See yellow jessamine root powder

"Geni Cide", See Xanthone



99.	"Gesarol Dust Insecticide" (containing 3 percent of DDT)	Pepper weevil	Calif.	VP	
	Do.	Red spiders	Mi.	P	
	Do.	Potato flea beetles	do.	P	
	Do.	Colorado potato beetle	do.	VP	
	Do.	Mexican bean beetle	do.	P	
	Do.	Tobacco flea beetle	Fla.	VP	
	Do.	Tobacco hornworm	do.	VP	
	Do.	Southern green stinkbug	do.	P	
	Do.	Tomato fruitworm	Ohio	VP	
100.	"Gesarol Spray Insecticide" (containing 5 percent of DDT and wetting agent)	Green peach aphid	Mi.	P	4 lbs. per 100 gal. water.
	Do.	Red spiders	do.	P	Do.
	Do.	Colorado potato beetle	do.	VP	Do.
	Do.	Mexican bean beetle	Mi.	P	Do.
	Do.	Onion thrips	Mi. (F)	P	7.5 lbs. per 100 gal. water; less effective than tartar emetic.
	Do.	Gladiolus thrips	do.	P	Do.
	Do.	Tobacco flea beetle	Fla.	VP	Applied as a dust.
	Do.	Tomato fruitworm	Ohio	VP	Do.
	"Gesarol spray insecticide" plus brown sugar	Onion thrips	Mi.	N	Less effective than when used alone.
	Do.	Gladiolus thrips	do.	N	Do.
101.	Guanadine 4,6-dinitro-o-cresylate	Pea weevil	Oreg.	N	Less effective than ammonium 4,6-dinitro-o-cresylate.
	Do., plus clay	do.	Idaho	P	Irritating to nasal passages of operator 70 percent control.
102.	"Gulf Spray No. 285" and "No. 303" (0.05% pyrethrins plus "IN-930" and sesame oil)	Tobacco moth	Va.	N	Not effective.
	Do.	Cigarette beetle	do.	N	Do.
103.	<u>Halogeton glomeratus</u>	Mexican bean beetle	Ohio	N	Dust.
104.	2-Heptanone semicarbazone	Mexican bean beetle	do.	N	Dust mixed with equal parts of pyrophyllite.
	Do.	Tomato fruitworm	do.	N	Do.
105.	Hydrazobenzene	Mexican bean beetle	do.	P	Do.
	Do.	Tomato fruitworm	do.	N	Do.
	Do.	Pea aphid	do.	N	Do.
106.	Hydroquinone	Red spiders	Mi.	I	Spray 4 pounds to 100 gal. water caused injury.
	Do.	Citrus mealybug	do.	I	Do.
107.	"IN-5052-A25" (containing 5% of 2-hydroxy-2,4,4,4,7-pentamethyl flavan in "Celite")	Mexican bean beetle	Ohio	P	Dust
	Do.	do.	Ohio (F)	N	0.015 and 0.03% in sprays; 0.5, 1 and 1.5% in dusts.

"IN-5052-A25" (containing 5% of 2-hydroxy-2,4,4,4,7-pentamethyl flavan in "Celite")		Mexican bean beetle	Md. (F)	N	Compared with cube at comparable strengths in sprays and dusts.
Do.		Pea aphid	Ohio	P	Dust.
Do.		Tobacco flea beetle	N. C.	N	
"IN-5052-A25" plus -					
"Fermate"		Mexican bean beetle	Ohio (F)	N	Power sprayer, knapsack duster.
Pyrophyllite		do.	Va. (F)	N	Hand duster 0.5 percent strength.
108.	o-Iodoacetanilide	do.	Ohio	N	Dust mixed with equal parts of pyrophyllite.
	Do.	Tomato fruitworm	do.	N	Do.
	Do.	Pea aphid	do.	N	Do.
109.	p-Iodoacetanilide	Mexican bean beetle	do.	N	Do.
	Do.	Tomato fruitworm	do.	N	Do.
	Do.	Pea aphid	do.	N	Do.
110.	m-Iodonitrobenzene	Mexican bean beetle	do.	N	Do.
	Do.	Tomato fruitworm	do.	N	Do.
	Do.	Pea aphid	do.	N	Do.
111.	o-Iodonitrobenzene	Mexican bean beetle	Ohio	N	Do.
	Do.	Tomato fruitworm	do.	N	Do.
	Do.	Pea aphid	do.	N	Do.
112.	p-Iodonitrobenzene	Mexican bean beetle	do.	N	Do.
	Do.	Tomato fruitworm	do.	N	Do.
	Do.	Pea aphid	do.	N	Do.
113.	"Iron arsenate" (Also see "Scorodite")	Pea weevil	Oregon	N	Ineffective with and without honey solution.
114.	"Iron arsenite"	do.	do.	P	76% control with honey solution otherwise ineffective.
	"Iron arsenite" plus pyrophyllite (1:3)	Potato flea beetles	Wash.	P	Repellant to adults; caused slight foliage injury.
115.	Isoamyl salicylate	Tobacco hornworm	S. C. (F)	R	Attractant in trap cages for adults.
	Do.	do.	Tenn. (F)	R	Do.
<u>Juglans nigra</u> L. (See black walnut husk extract)					
116.	Kerosene oil emulsion	Corn root webworm	Tenn. (F)	I	Applied to soil surrounding newly set plants.
117.	"K-1127" (containing 2-chloro-2(2,4,5-tetrachlorophenyl) diethyl ether)	Corn earworm	Calif. (F)	N	Used in oil on sweet corn.
	"K-1127" plus pyrethrum extract in oil	Tobacco moth	Va.	P	Used in oil spray.
	Do.	Cigarette beetle	do.	N	Do.
118.	Lead arsenate	Tomato fruitworm	Calif. (F)	VP	Used on tomatoes.
	Do.	Tobacco hornworm	Fla.	R	Used as a standard of comparison.
	Do.	Vegetable weevil	Fla. (F)	VP	Applied as sprays and dusts.

Lead arsenate	Colorado potato beetle	Md. (F)	VP	Used for basis for comparing other materials.
Do.	do.	Ohio (F)	VP	16 percent dust used as standard of comparisons.
Do.	Pea weevil	Oregon	N	Ineffective with and without honey solution.
Do.	Imported cabbageworm	S. C. (F)	P	50 percent control with 50% strength.
Do.	Diamondback moth	do.	P	64 percent control with 50% strength; also 16 percent control.
Do.	Tobacco hornworm	S.C. (F) N.C. (F)	R	3 pounds per 100 gal. water.
Do.	Corn root webworm	Tenn. (F)	P	Applied to roots and stems of tobacco prior to transplanting.
Lead arsenate plus-				
Pyrophyllite and diatomaceous earth	Potato flea beetle	Wash. (F)	N	25% lead arsenate.
Tobacco dust (1:1)	Tobacco hornworm	Fla. (F)	VP	Used as standard of comparison.
Cryolite (1:1)	Tomato fruitworm	Calif. (F)	VP	Used on tomatoes.
Paris green (5:1)	Tobacco flea beetle	N. C. (F)	R	
119. Lead arsenite plus pyrophyllite (1:3)	Potato flea beetle	Wash.	P	Slight foliage injury; repellant to adults.
120. "Lethane" (containing 80 percent of butyl thiocyanate)	Tobacco moth	Va.	N	10 percent strength in oil moderately effective.
Do.	Cigarette beetle	do.	N	10 percent strength in oil spray not effective.
"Lethane" plus -				
DDT in oil	do.	do.	N	Lethane added nothing to effectiveness.
DDT in oil	Tobacco moth	do.	N	Do.
Pyrethrum extract in oil	do.	do.	P	Highly effective.
Pyrethrum extract in oil	Cigarette beetle	do.	N	"Lethane" added little to effectiveness of pyrethrum.
"Velsicol AR-60"	do.	do.	P	Marked synergistic effect.
"Velsicol AR-60"	Tobacco moth	do.	I	Tested for synergistic effect.
121. "Lethane 60" (containing 50% of beta thiocyno ethyl esters of aliphatic fatty acid and 50% of oil)	Turnip aphid	La. (F)	N	Spray (1:400).
Do.	Pea weevil	Idaho	N	Used with magnesium oxide.
"Lethane 60" plus -				
Rotenone	do.	do.	N	
Derris	Turnip aphid	La. (F)	N	Control in accordance with rotenone content.
Derris	Cabbage caterpillars	do.	P	Apparently increased effectiveness of derris.
Cube	Cabbage looper	S. C. (F)	P	"Lethane" in mixture had about the same effect as oil.
Cube	Imported cabbageworm	do.	P	Do.
"Triton B-1956"	Red spiders	Md.	P	Spray 1:400; injury.
"Triton B-1956"	Green peach aphid	do.	P	Do.
"Black Leaf 10"	Pea aphid	Wisc.	VP	
Cube	Tobacco hornworm	Fla. (F)	P	Dust mixtures containing 1% "Lethane" and from 0.5 to 1% rotenone.



122.	"Lethane B-71" (containing 13.5% of beta beta dithiocyano diethyl ether, 80% talc, and 5% magnesium carbonate)	Turnip aphid	La. (F)	I	14% "Lethane B-71" ineffective in one experiment.
	Do.	Mexican bean beetle	Ohio	N	Dust.
	Do.	Pea aphid	do.	VP	Dust.
123.	"Lethane 112" (containing beta beta dithiocyano diethyl ether)	Pea weevil	Idaho	N	10 percent dust.
	Do.	Potato aphid	Maine	I	
124.	"Lethane 384" (containing 50% of beta butoxy beta thioccyano diethyl ether) plus cryolite	Pea weevil	Idaho	N	1½ "Lethane", 45 percent cryolite.
	"Lethane 384" plus pyrethrum	do.	do.	N	2% "Lethane", 1% pyrethrins, 35% control.
125.	Lime-sulfur	Lygus spp.	Ariz.	P	Dried and ground into a powder.
	Do.	Red spiders	Md.	VP	
	Do. (dry)	Potato leafhopper	Ohio	P	Beans and potatoes; power sprayer.
	Lime-sulfur plus - Pyrethrum extract	Beet leafhopper	Idaho (F)	VP	
	Nicotine sulfate	Onion thrips	Calif. (F)	VP	Lime sulfur control onion mildew.
126.	Lithium fluoride	Pea weevil	Oregon	P	54% control with honey solution otherwise not effective.
127.	"Loro" (containing lauryl thiocyanate)	Turnip aphid	La. (F)	P	Spray 1:1000 practically ineffective.
	"Loro" plus -				
	Methyl chloride	Green peach aphid	Md.	P	As an aerosol.
	Methyl chloride	Greenhouse whitefly	do.	VP	Do.
	Methyl chloride	Onion thrips	do.	VP	Do.
	"Freon 12"	Red spiders	do.	VP	Do.
	"Freon 12"	Citrus mealybug	do.	VP	Do.
128.	"Lysol" (cresylic acid)	Gladiolus thrips	Md. (F)	VP	Alternate corm treatment just before planting; inferior to methyl bromide.
129.	"Macodust" (containing 0.375% rotenone, 1.7% nicotine alkaloid, 10% sulfur plus "Vacatone" and "Pyrax")	Pea weevil	Idaho (F)	VP	
	Do.	Diamondback moth	S. C. (F)	P	Tended to be more effective than 0.5% rotenone.
	Do.	Imported cabbageworm	do.	N	Less effective than 0.5% rotenone.
	Do.	Cabbage looper	do.	N	Less effective than 0.5% rotenone.
130.	Magnesium arsenate	Pea weevil	Oreg.	P	75% control with honey solution other- wise not effective.
131.	Magnesium fluosilicate	do.	do.	P	90% control with honey solution otherwise not effective.



132.	Magnesium oxide	Pea weevil	Oreg.	N	Very effective at low humidity probably due to dessication.
	Do.	do.	Idaho (F)	P	Some mortality both in laboratory and in the field.
	Do.	<u>Lygus</u> spp.	Ariz.	VP	Light grade material undiluted; heavy grade less promising.
	Do.	Tobacco flea beetle	N. C. (F)	N	Too light to use in hand dusters.
	Magnesium oxide plus pyrophyllite	Potato flea beetle	Wash. (F)	N	
133.	"Mercury arsenate"	Pea weevil	Oreg.	N	22 percent control with honey solution; otherwise none.
	Methylated naphthalene; See "Velsicol"				
134.	Methyl bromide	Corn earworm	Calif. (F)	P	In oil on sweet corn.
	Do.	Mole crickets	Fla. (F)	I	
	Do.	Gladiolus thrips	Md. (F)	VP	Complete control; no injury to corms.
	Do.	Cyclamen mite	Md.	VP	Complete control without plant injury.
	Do.	Ants	Md. (F)	VP	Killed ant colonies in soil.
	Do.	Red spiders	Md.	VP	Slight injury
	Do.	Citrus mealybug	do.	VP	Do.
	Methyl bromide plus oil "Deobase"	Ants	Md. (F)	VP	Used as soil treatment around dormant delphinium.
135.	Methyl iodide	Corn earworm	Calif. (F)	P	In oil on sweet corn.
	Do; plus dichloroethyl ether and "Celite"	Sugar-beet wireworm	do.	N	Ineffective as repellant dusted on seeds.
136.	Naphthalene	Pacific Coast wireworm	Wash. (F)	R	Results affected by efficiency of farm tools.
137.	"Nico L Dust" (containing pyrethrum and thiocyanate)	Pea weevil	Idaho	N	
138.	<u>Nicotiana attenuata</u> Torr.	Beet leafhopper	do.	N	2 gal. extract and 2 qts. "Penetrol" in 100 gal. water.
139.	<u>Nicotiana glauca</u> extract containing 0.07 percent of anabasine	Green peach aphid	Md.	VP	
	Do.	Red spiders	do.	VP	
---	Nicotine: See "Black Leaf 10", "Black Leaf 40", and "Black Leaf 155"				
140.	Nicotine alkaloid	Corn earworm	Calif. (F)	N	In oil on sweet corn.
	Do.	Onion thrips	do.	P	
	Nicotine alkaloid plus - Oil	Pea aphid	Wisc.	P	Dust used at 2 percent strength with each of 9 different oils.
	Oil and glycerine	do.	do.	N	Dust containing 2 percent of nicotine.
	Sulfur	do.	do.	P	
	Cube	do.	do.	N	Several different mixtures 2% nicotine, 0.2% rotenone.
	Derris and oat dust	do.	do.	N	

	Derris and lignin	Pea aphid	Wisc.	N	
	"Velsicol oil"	do.	do.	VP	
	"Penetrol" and sulfur	do.	do.	VP	0.1 to 0.4 percent.
	Propylene laurate oil	do.	do.	VP	0.6 percent oil.
141.	3-Nitrophthalic acid	Red spiders	Md.	I	Spray 4 lbs. per 100 gal. water plus spreader caused injury.
	Do.	Citrus mealybug	Md.	I	Do.
142.	2-Nitro-2-methyl-1-propanol	do.	do.	I	Do.
	Do.	Red spiders	do.	I	Do.
	Do.	Pacific Coast wireworm	Wash.	N	Used in 2 strengths with and without soil.
143.	2-Nitro-6-chloroaniline (1%)	Potato leafhopper	Ohio	I	Dust, hand dusters.
144.	2-Octanone semicarbazone	Mexican bean beetle	Ohio	N	Dust.
	Do.	Tomato fruitworm	do.	N	Do.
145.	Oil, "Deo-Base" plus soap	Onion thrips	Md. (F)	N	
	Do.	Gladiolus thrips	do.	N	Severe injury to gladiolus.
	Oil, mineral plus pyrophyllite	Cabbage caterpillars	S. C. (F)	N	Used as dust containing 2% of oil.
146.	Oil emulsion	do.	do.	N	Containing 4 percent of "Greenhouse Volck" oil.
	Do.	do.	La. (F)	N	
	Do.	Turnip aphid	do.	N	
147.	Paris green	Onion thrips	Calif. (F)	N	
	Do.	Pea weevil	Oreg.	N	
	Paris green plus -				
	Wheat middlings	Green June beetle	S. C. (F)	R	
	Lead arsenate (1:5)	Tobacco flea beetle	N. C. (F)	R	
	"Pyrocide"	Pea weevil	Idaho	P	
	Sweetpotato (bait)	Sweetpotato weevil	La.	P	
	Lime (1:9)	Cabbage caterpillars	La. (F)	R	
	Brown sugar	Onion thrips	Md. (F)	N	Severe injury to onions, poor control.
	Corn sirup	do.	do.	N	Do.
	Blackstrap molasses	do.	do.	N	Do.
	Brown sugar	Gladiolus thrips	do.	N	Caused moderate injury.
	Corn sirup	do.	do.	N	Do.
	Blackstrap molasses	do.	do.	N	Do.
	Honey solution	Pea weevil	Oreg.	P	69 to 78 percent control.
---	Pepper: See black pepper				
148.	Phenazine	Tomato fruitworm	Ohio	P	Dust.
	Do.	Pea aphid	do.	P	Do.
149.	Phenothiazine	Mexican bean beetle	Ohio (F)	VP	4 lbs. to 100 gal. in spray; 16 percent dust.
	Do.	Colorado potato beetle	do.	VP	16% Dust.

Phenothiazine	Pea aphid	Ohio	P	Dust.
Do. (75 percent)	Tomato fruitworm	Calif. (F)	VP	Used on tomatoes.
Do.	Pea weevil	Oreg.	N	
Phenothiazine plus-				
Honey solution	do.	do.	N	
Talc (1:1)	Tomato fruitworm	Ohio	P	
Talc (1:1)	do.	Ohio (F)	P	Poor dustability.
Xanthone	Cabbage caterpillars	S. C. (F)	N	Used 10 percent of each material.
"Black Leaf 155"	do.	S. C. (F)	N	10 percent phenothiazine and 2 percent nicotine.
Spreader	Potato flea beetle	Md.	N	4 lbs. per 100 gal water did not kill adults.
Spreader	Colorado potato beetle	Md. (F)	VP	Killed larvae.
Spreader	Mexican bean beetle	do.	P	4 lbs. per 100 gal. water.
Pyrophyllite	Potato flea beetle	Md.	VP	25 percent dust minimum effective strength.
Pyrophyllite	Colorado potato beetle	Md. (F)	VP	10 percent dust effective against larvae.
Pyrophyllite	Mexican bean beetle	do.	P	5 percent dust.
Pyrophyllite	Onion thrips	do.	VP	Stains foliage.
Pyrophyllite	Gladiolus thrips	do.	VP	Do.
Brown sugar and spreader	do.	do.	N	
"Deo-Base" oil and soap	do.	do.	N	Injured gladiolus.
Brown sugar and spreader	Onion thrips	do.	N	
"Deo-Base" oil and soap	do.	do.	N	
Talc	Corn earworm	Va. (F)	P	20 percent dust, on beans.
Cryolite	do.	do.	P	10 percent phenothiazine and 40 percent sodium fluoaluminate, on beans.
Cryolite	Tomato fruitworm	Ohio (F)	N	No more effective than cryolite alone.
150. Phenoxathiin	Red spiders	Md.	P	4 lbs. to 100 gal. water.
Do.	Green peach aphid	Md.	P	Do.
Do.	Onion thrips	Md. (F)	N	Used as dusts and sprays.
Do.	Corn earworm	Calif. (F)	N	In oil on sweet corn.
Do.	Tomato fruitworm	Ohio	P	Dust on tomatoes.
Do.	do.	Ohio (F)	N	Do.
Do.	Mexican bean beetle	do.	N	4 lbs. to 100 gal. of water, 16% dust.
Do.	Colorado potato beetle	do.	P	16% dust, knapsack dusters.
Do.	Pea aphid	Ohio	P	Dust.
Do.	Imported cabbageworm	S. C. (F)	N	4 lbs. to 100 gal. water and as 20% dust.
Do.	Cabbage looper	S. C. (F)	N	Injury to leaf margins.
Do.	Diamondback moth	do.	P	Do.
Do.	Pea aphid	Wisc.	N	Do.
Phenoxathiin in oil (10 percent)	Tobacco moth	Va.	N	Only moderately effective.
Do.	Cigarette beetle	do.	N	Not effective.
Phenoxathiin plus-				
Pyrethrum in oil	Tobacco moth	Va.	N	
Pyrethrum in oil	Cigarette beetle	do.	N	Do.
Derris resins - See Derris resins				
"Deo-Base" oil, "Span 20" and "Tween 20"	Red spiders	Md.	P	0.5 percent solutions caused injury.
Pyrophyllite	do.	do.	P	Dusts and sprays caused severe injury.



Phenoxathiin plus -					
Pyrophyllite	Potato flea beetle	Md.	P		Dusts and sprays caused severe injury.
Pyrophyllite	Colorado potato beetle	Md. (F)	I		Dust and spray caused no injury.
Pyrophyllite	Mexican bean beetle	do.	N		Severe injury with 10 and 25 percent of phenoxathiin and with 2 lbs. per 100 gal. of water.
"Deo-Base" oil	Onion thrips	Md.	N		
--- p-Phenylazoaniline: See p-Aminoazobenzene					
151. Phosphomolybdic acid	Pacific Coast wireworm	Wash.	N		Two strengths tested with and without soil.
152. Phosphotungstic acid	do.	do.	N		Do.
153. Phthalic anhydride	do.	do.	N		Do.
154. Phthalonitrile	Red spiders	Md.	N		Spray 4 lbs. per 100 gal. water.
Do.	Green peach aphid	do.	N		Do.
Do.	Hornworms	N. C.	P		Promising in comparison with cryolite at low temperature only.
Do.	Pea weevil	Oreg.	N		
Phthalonitrile plus honey solution	do.	do.	N		
--- <u>Phytolacca decandra</u> : See poke root powder					
155. Piperine (obtained from black pepper)	Green peach aphid	Md.	N		Spray 4 lbs. per 100 gal. water and as dust.
Do.	Red spiders	do.	N		Do.
Do.	Onion thrips	do.	N		Do.
Do.	Greenhouse whitefly	do.	N		Do.
Do.	Onion thrips	Md. (F)	N		Do.
Do.	Mexican bean beetle	Ohio	N		Dust.
Do.	Pea aphid	do.	N		Do.
Do.	Pea weevil	Oreg.	N		Slight toxicity but too low to be promising.
Do.	do.	Idaho	N		
Piperine plus -					
Magnesium oxide	do.	do.	N		
"Pyrocide"	do.	do.	N		
Methyl chloride (aerosol)	Red spiders	Md.	N		Too lachrymatory.
Methyl chloride (aerosol)	Green peach aphid	do.	N		Do.
Methyl chloride (aerosol)	Citrus mealybug	do.	N		Do.
156. Poke root powder, <u>Phytolacca decandra</u>	Tobacco hornworm	Fla.	N		Dust.
157. Potassium arsenate plus pyrophyllite	Potato flea beetles	Wash.	N		25 percent strength caused foliage injury and repelled adults.
158. Potassium fluosilicate plus pyrophyllite	do.	Wash. (F)	P		35 percent strength, micronized.
Do.	Pea weevil	Oreg.	N		Ineffective without sweetened water, 44 percent control with.



159	Prickly ash bark powder ( <u>Xanthoxylum americanum</u> )	Tobacco hornworm	Fla.	N	Dust.
160.	Pyrethrum extract plus				
	Oil	Corn earworm	Calif.	R	In oil on sweet corn.
	Dry lime-sulfur	Beet leafhopper	Idaho (F)	VP	10 lbs. dry lime sulfur and 1 qt. extract to 100 gal. water.
	Wettable suflur	do.	do.	VP	10 lbs. sulfur and 1 qt. extract to 100 gal. water.
	Oil	Tobacco moth	Va. (F)	R	Oil spray containing 0.2% of pyrethrins
	Oil	Cigarette beetle	do.	R	Do.
	"K-1127" in oil spray	do.	Va.	N	
	Butyl thiocyanate	do.	do.	N	In oil spray the addition of thiocyanate added little to effectiveness of pyrethrins.
	Phenoxathiin in oil	Tobacco moth	do.	N	
	"K-1127" in oil	do.	do.	P	
	Butyl thiocyanate in oil	do.	do.	P	Highly effective.
161.	Pyrethrum maro	Mexican bean beetle	Mi. (F)	P	
	Do.	Potato leafhopper	do.	VP	
	Pyrethrum maro plus -				
	"Black Leaf 10"	do.	do.	VP	
	"Black Leaf 155"	do.	do.	VP	
	Pyrophyllite	do.	do.	VP	
	Sulfur	do.	do.	VP	
	Talc	do.	do.	VP	
	"Black Leaf 10"	Mexican bean beetle	do.	P	
	"Black Leaf 155"	do.	do.	P	
	Pyrophyllite (3:2)	do.	do.	P	
	Sulfur (3:2)	do.	do.	P	
	Talc (3:2)	do.	do.	P	
	"Black Leaf 10"	Imported cabbageworm	Mi.	P	
	"Black Leaf 155"	do.	do.	VP	
	Pyrophyllite (8:1)	Potato leafhopper	Ohio (F)	P	Applied with hand dusters to beans and potatoes.
	"Black Leaf 10"	Mexican bean beetle	do.	N	2% nicotine, knapsack dusters.
	"Black Leaf 155"	do.	do.	N	
162.	Pyrethrum powder	Tobacco moth	Va.	N	0.8% pyrethrins only moderately effective.
	Do.	Cigarette beetle	do.	N	0.8% pyrethrins not effective.
	Do.	Cabbage caterpillars	S. C. (F)	R	Not as effective as dust mixtures prepared from extract.
	Do.	Tobacco flea beetle	N. C. (F)	P	0.5 percent strength less effective than oryolite or cube.
	Do.	Mexican bean beetle	Ohio (F)	P	Knapsack sprayers 4 lbs. per gal. water.
	Do.	Pea weevil	Oreg.	N	Relatively ineffective with or without sweetened water.
	Pyrethrum powder plus -				
	Pyrophyllite	do.	Idaho (F)	N	Satisfactory results in home gardens, 0.2% pyrethrins.

Pyrophyllite	Pea weevil	Idaho	N	0.3% gave 50 percent mortality.
Sesame oil and magnesium oxide	do.	do.	N	0.3% pyrethrins; 86 percent mortality.
Aluminum fluosilicate	do.	do.	P	
"DN-111"	do.	do.	VP	0.1% pyrethrins.
Magnesium oxide	do.	do.	N	0.2% pyrethrins.
Sesame oil and pyrophyllite	do.	do.	N	0.3% pyrethrins; 62% mortality.
Borax	do.	do.	P	57% mortality with borax, 36% without.
Cryolite (1:3)	Tobacco flea beetle	Fla. (F)	I	Dust.
"Lethane 60"	Tobacco hornworm	do.	P	
Pyrophyllite	Cabbage oaterpillars	La. (F)	R	0.2 and 0.3% pyrethrins, little difference in effectiveness.
Oil and pyrophyllite	do.	do.	P	
Sulfur	Potato leafhopper	Ohio (F)	R	0.025% pyrethrins on potatoes and beans, hand dusters.
Magnesium oxide	Pea weevil	Oreg.	N	Very effective when fresh and applied at low humidity.
Wheat middlings	Green June beetle	S. C. (F)	N	Used as poisoned bait.
Water	do.	S. C. (F)	N	Paralyzes larvae but loses effectiveness in soil.
163. "Pyrocide" (dust containing 2% of pyrethrins from extract in oil)	Pea weevil	Idaho (F)	N	Diluted with pyrophyllite to contain 0.1, 0.2 and 0.3 percent of pyrethrins. Control ranged from 6 to 87 percent which is much inferior to control with rotenone dusts.
Do.	Potato flea beetles	Wash. (F)	N	
"Pyrocide" plus -	Pea weevil	Idaho	P	Several different mixtures tested.
Magnesium oxide	do.	Idaho (F)	N	Do.
Magnesium oxide	do.	Idaho	N	
Calcium arsenate	do.	do.	P	
Cryolite	do.	do.	P	
Paris green and magnesium oxide	do.	do.	N	4 percent mortality.
"Black Leaf 40" and lime	do.	do.	N	0.3 percent pyrethrins; 95 percent mortality.
"Sesame oil" and magnesium oxide	do.	do.	N	0.2 percent pyrethrins; 40 percent mortality.
Paris green	do.	do.	N	0.2 percent pyrethrins; 78 percent mortality.
Piperine	do.	do.	N	0.1 percent pyrethrins; 85 percent mortality.
Magnesium carbonate (light)	do.	do.	P	0.1% pyrethrins; 67% mortality.
Magnesium carbonate (heavy)	do.	do.	P	
Black pepper	do.	do.	N	
Sesame oil and pyrophyllite	Pea weevil	do.	N	
Sesame oil and magnesium oxide	do.	do.	N	
Sulfur	Lygus plant bugs	Ariz. (F)	R	0.2 percent pyrethrins, 50 percent sulfur.
Sulfur and magnesium oxide	do.	Ariz.	VP	
Pyrophyllite	Cabbage caterpillars	La. (F)	R	
Pyrophyllite	Turnip aphid	do.	P	Dust containing 0.15 percent of pyrethrins.
"Black Leaf 10"	do.	do.	P	0.15% pyrethrins did not increase effectiveness of 2% nicotine dust.

	"Pyrocide" plus -	Cabbage caterpillars	La. (F)	P	2 percent nicotine increased effective-
	"Black Leaf 155"				ness, 0.1% pyrethrins.
	"Black Leaf 10"	do.	do.	P	Do.
	Pyrophyllite	Tobacco flea beetle	N. C. (F)	P	0.5 percent of pyrethrum less effective
	Water	Green June beetle	S. C. (F)	N	than cryolite or cube.
	Pyrophyllite	Onion thrips	Utah (F)	P	For infestations in tomato fruits.
	Pyrophyllite	Western flower thrips	do.	P	Do.
	Sulfur and pyrophyllite	Lygus plant bugs	do.	R	Very good results with power duster on
	"Lethane 60"	Onion thrips	do.	P	275 acres seed beets.
	"Lethane 60"	Western flower thrips	do.	P	On tomatoes.
					Do.
164.	"Pyrotor 100" (containing 0.6% pyrethrins)	Mexican bean beetle	Md.	P	Dust.
	Do.	Cabbage looper	do.	P	Do.
165.	"Quik-Kill" (containing 5.5% of calcium arsenite and 63% of calcium arsenate)	Lygus plant bugs	Ariz. (F)	N	Mixed with sulfur (1:7 no injury to sugar beets.
166.	"Red Arrow Garden Spray" (containing 2 percent of pyrethrins)	Corn root webworm	Tenn. (F)	P	Applied to soil surrounding newly set tobacco plants.
167.	"Red River Potato Mix" (containing 25% of paris green, 36% zinc arsenite and 25% basic copper sulfate)	Potato flea beetles	Wash. (F)	P	Mixed with pyrophyllite (2:3).
168.	Red squill plus sweetpotato	Sweetpotato weevil	La.	N	Used as a bait.
169.	Reinecke salt	Onion thrips	Calif. (F)	N	
170.	Rhubarb root powder ( <u>Rheum officinale</u> )	Tobacco hornworm	Fla.	N	Dust.
171.	"Roccal" (alkyl-dimethyl-benzyl- ammonium chloride)	Red spiders	Md.	N	1 oz. to 4 gal. water.
	Do.	Green peach aphid	do.	N	Do.
---	Rotenone: See derris, cube, barbasco, timbo and trade names.				
172.	Sabadilla oil extract	Pea aphid	Wisc.	I	Used with pyrophyllite as a dust.
	Sabadilla oil extract plus -				
	Walnut shell flour	do.	do.	I	Do.
	"Corvus oil"	do.	do.	I	Do.
	Cube	do.	do.	I	Do.
	Derris	do.	do.	I	Do.
173.	Sabadilla seed, ground	do.	do.	I	Do.
	Sabadilla seed plus derris and "Corvus oil"	do.	do.	I	Do.



174.	"Scorodite" (essentially ferric arsenate)	Cabbage caterpillars	La. (F)	P	Dust, micronized, undiluted on fall crop cabbage.
	Do.	Mexican bean beetle	Ohio	N	Dust.
	Do.	Cabbage looper	S. C. (F)	P	Dusting qualities not good; no plant injury; inferior to calcium arsenate and lead arsenate; slow acting.
	Do.	Imported cabbageworm	S. C. (F)	P	Do.
	Do.	Mexican bean beetle	Md.	P	Spray
	"Scorodite" plus hydrated lime (1:1)	Cabbage caterpillars	S. C. (F)	P	Better dusting qualities than undiluted material.
175.	Soap, white laundry (spray)	do.	S. C. (F)	N	2 percent of soap in spray caused 50 percent control and severe plant injury.
	Do.	do.	La. (F)	P	
	Do.	Turnip aphid	La. (F)	P	Stunted plants.
176.	Sodium arsenate	Pea weevil	Oreg.	P	Used with honey solution.
	Sodium arsenate plus pyrophyllite (1:3)	Potato flea beetle	Wash.	P	Foliage injury; repellant to adults.
177.	Sodium arsenite	Green June beetle	S. C. (F)	N	Used in poisoned baits with wheat middlings.
	Do.	Sweetpotato weevil	La.	P	Used in poisoned bait with fresh sweet-potato.
---	Sodium arsenite, coated (A-15)	Mexican bean beetle	Ohio	N	Dust.
	Sodium arsenite, coated (A-120)	do.	do.	P	Do.
178.	Sodium cyanide	Pacific Coast wireworm	Wash.	I	Kills in 4 days at 0.1%.
	Do.	do.	Wash. (F)	I	As repellant.
179.	Sodium fluoride plus pyrophyllite (1:3)	Potato flea beetle	do.	N	Foliage injury, control not satisfactory.
	Sodium fluoride with honey solution	Pea weevil	Oreg.	P	
180.	Sodium fluosilicate	do.	Oreg. (F)	VP	Some foliage injury.
	Do.	do.	Oreg.	VP	Very effective in 20% honey solution.
	Do.	Tomato fruitworm	Calif. (F)	VP	Used 50% dust on tomatoes.
	Do.	do.	Ohio (F)	P	As effective as cryolite; less effective than calcium arsenate.
	Do.	Green June beetle	S. C. (F)	VP	Effective in baits with wheat middlings.
	Do.	Cabbage caterpillars	La. (F)	P	Effective but burned plants.
	Sodium fluosilicate plus -				
	Soybean flour and pyrophyllite	do.	S. C. (F)	VP	Micronized good dusting qualities and very effective but caused injury.
	Barium carbonate and tricalcium phosphate	do.	do.	VP	Caused plant injury.
	Pyrophyllite	do.	do.	VP	Do.
	Sulfur and tricalcium phosphate	do.	do.	VP	Do.
	Pyrophyllite	Potato flea beetles	Wash. (F)	VP	31.5% strength caused foliage injury.
	Brown sugar and water (1:2:17)	Pea weevil	Oreg. (F)	VP	8 to 10 gal. per acre gave 9.4% control.
181.	"Spergon" (essentially chloranil)	Sugar-beet wireworm	Calif. (F)	N	Not effective as a wireworm repellant.

181a.	"Spra Kast" (castor bean plant leaves)	Tomato fruitworm	Ohio	N	Spray
	Do.	Green peach aphid	Maine (F)	I	
	Do.	Potato aphid	do.	I	
	Do.	Buckthorn aphid	do.	I	
182.	"Stimtox A" (a dust containing oil and 0.31% of pyrethrins from extract)	Cabbage looper	S. C. (F)	R	Micronized material tended to be superior to unm micronized; "Stimtox A" diluted to 0.15% pyrethrins superior to pyrethrum diluted to 0.3 percent.
	Do.	Imported cabbageworm	do.	R	Do.
	Do.	Diamondback moth	do.	P	35 percent control.
	"Stimtox A" plus "Black Leaf 155" and sulfur	Cabbage caterpillars	S. C. (F)	I	Addition of 2% nicotine tended to reduce effectiveness.
	"Stimtox A" (containing 0.5% of pyrethrins)	Tobacco moth	Va.	P	Equally as effective as pyrethrum containing 0.8% of pyrethrins.
	Do.	Cigarette beetle	do.	N	Not effective.
183.	Strontium arsenite plus pyrophyllite (1:3)	Potato flea beetles	Wash.	N	Excessive plant injury; not repellant.
184.	Styrene dibromide	Corn earworm	Calif. (F)	VP	In oil on sweet corn.
185.	Sulfur	Tomato russet mite	Calif.	R.	Used on tomatoes at 25% strength with cryolite or calcium arsenate.
	Do. (Several brands)	Red spiders	do.	R	
	Do.	Lygus plant bugs	Ariz. (F)	R	Yellow dusting sulfur undiluted no injury to sugar beets.
	Do. (Black gashouse)	do.	do.	VP	Results similar to those with yellow sulfur.
	Do.	Cabbage caterpillars	La. (F)	N	
	Do.	Turnip aphid	do.	N	
	Do. (Spider brand)	Potato leafhopper	Ohio (F)	N	On potato and beans; hand and power dusters and sprayers.
	Do. (Several brands)	Pea weevil	Oreg.	N	
	Sulfur, wettable	Lygus plant bugs	Ariz.	VP	Dust.
	Do.	Beet leafhopper	Idaho	VP	10 lbs. per 100 gal. water.
	Do.	Potato leafhopper	Ohio (F)	P	On beans and potatoes with hand dusters.
	Sulfur plus - Magnesium oxide (4:1)	Lygus plant bugs	Ariz.	VP	Results better than those with undiluted sulfur.
	Wetting agent (Spider brand)	Potato leafhopper	Ohio (F)	N	On beans and potatoes with power sprayer.
	Sulfur paste (Koppers)	do.	do.	P	On potatoes and beans with power sprayer.
186.	Sulfuric acid	Pacific Coast wireworm	Wash.	N	2 strengths with and without soil.
187.	Sulfurous acid	do.	do.	N	3 strengths with and without soil.
188.	Tartar emetic	Onion thrips	Calif. (F)	R	Not as effective as nicotine sulfate in sprays.

Tartar emetic	Hornworm moths	Tenn.		In sweetened baits for moths, effective but constitutes some danger to farm animals, water extract of rotenone more satisfactory.
Tartar emetic plus -				
Cane sugar	Onion thrips	Idaho (F)	R	Applied too late to affect yields.
Brown sugar	Cabbage caterpillars	La. (F)	P	Spray showed promise.
Do.	Onion thrips	Md. (F)	R	72 percent increase in yield of onions.
Beet molasses	do.	do.	VP	
Apple sirup	do.	do.	N	
Blackstrap molasses	do.	do.	P	Inferior results.
Cane sirup	do.	do.	P	Do.
Cane sugar	do.	do.	VP	
Cane sugar sirup	do.	do.	VP	
Corn molasses	do.	do.	P	Inferior.
Honey	do.	do.	VP	
Sorghum sirup	do.	do.	VP	
Brown sugar	Gladiolus thrips	do.	R	
Apple sirup	do.	do.	N	
Beet molasses	do.	do.	VP	
Blackstrap molasses	do.	do.	P	Inferior results.
Cane sirup	do.	do.	P	
Cane sugar	do.	do.	VP	
Cane sugar sirup	do.	do.	VP	
Corn molasses	do.	do.	P	Inferior.
Honey	do.	do.	VP	
Sorghum sirup	do.	do.	VP	
189. <u>Tephrosia virginiana</u> (4.25% of rotenone)	Pea weevil	Oreg.	VP	Equivalent to derris or cube at comparable rotenone.
190. Tetrachloroethane	Pacific Coast wireworm	Wash.	P	Action appears to be slow.
Do.	do.	Wash. (F)	P	As repellant, very good in some instances.
191. "Thanite" (Secondary terpene-alcohol thiocyanyl acetate)	Say stinkbug	Ariz.	P	Dust 5% strength.
Do.	Lygus plant bugs	do.	P	Dust, 5% strength.
192. Thundergod vine powder ( <u>Tripterygium wilfordii</u> )	Pea weevil	Oreg.	N	
Do.	Red spiders	Md.	N	Spray 4 lbs. to 100 gal. water, no injury.
Do.	Green peach aphid	Md.	N	Do.
193. Timbo plus pyrophyllite (0.5% rotenone)	Potato flea beetles	Wash. (F)	VP	Gives immediate relief, requires more applications than cryolite for seasonal control.
Timbo plus calcium arsenate	do.	do.	VP	
194. Tobacco powder plus brown sugar	Onion thrips	Md. (F)	N	Inferior to nicotine sulfate solutions.
Do.	Gladiolus thrips	do.	N	Do.



195.	Turkey mullein	Pea weevil	Idaho	N	Old material used.
196.	Turpentine emulsion	Corn root webworm	Tenn. (F)	I	Applied to soil surrounding newly tobacco plants.
197.	"Unico Dust No. 122" (containing 0.28% of rotenone and 0.3% of Lethane 60)	Mexican bean beetle	Ohio (F)	P	
198.	"USI Insecticidal Dust" (containing pyrophyllite impregnated with rotenone extract)	Cabbage caterpillars	S. C. (F)	VP	
199.	"V-33" (containing 0.33 percent of rotenone from extract)	Mexican bean beetle	Md. (F)	VP	Dust.
200.	"Velsicol AR-60" (a mixture of di- and tri-methyl naphthalene)	Tobacco moth	Va.	VP	Highly effective.
	Do.	Cigarette beetle	do.	P	Slightly effective.
	"Velsicol AR-60" plus -	do.	do.	P	Marked synergistic effect noted.
	Butyl thiocyanate	Tobacco moth	do.	I	
	Butyl thiocyanate	Cabbage caterpillars	S. C. (F)	P	Did not increase effectiveness of cube.
	Cube				
201.	"Velsicol AR-50" (a mixture of mono- and di-methyl naphthalene)	Tobacco moth	Va.	P	Highly effective.
	Do.	Cigarette beetle	do.	P	Slightly effective.
202.	White arsenic plus pyrophyllite (1:3)	Potato flea beetles	Wash.	P	Slight injury to foliage, not repellant to adults.
203.	Xanthone	Mexican bean beetle	Ohio (F)	N	16 percent dust burns bean plants; poor control.
	Do.	Colorado potato beetle	do.	N	Do.
	Do.	Red spiders	Md.	I	Spray 4 lbs. per 100 gal. water.
	Do.	Green peach aphid	do.	I	Do.
	Xanthone plus phenothiazine	Cabbage caterpillars	S. C. (F)	N	Used 10 percent of each material.
204.	n-Xenyl-pyromucamide	Mexican bean beetle	Ohio	N	Dust mixed with equal parts of pyrophyllite.
	Do.	Tomato fruitworm	do.	N	Do.
205.	n-(2,4-Xylyl)-pyromucamide	do.	do.	N	Do.
	Do.	Mexican bean beetle	do.	N	Do.
206.	Yam bean or jicama (contain 0.1% of rotenone with other extractives)	Cabbage caterpillars	La. (F)	P	Mixed with 1 part "Celite" and 3 of talc (20% yam bean) showed promise against imported cabbage worm only.
	Yam bean plus --				
	"Celite" and pyrophyllite	Mexican bean beetle	Ohio	N	Dust containing 10 percent of yam bean.
	"Celite" and pyrophyllite	Pea aphid	do.	P	Do.
	"Celite" (3:2)	do.	Wisc.	N	60% yam bean gave 78% mortality.

yam bean plus -					
"Celite" and pyrophyllite	Pea aphid	Wiso.	N		10, 20 and 40% strength tested.
Perria, "Celite" and pyrophyllite	do.	do.	N		
"Celite" and pyrophyllite	Mexican bean beetle	Va. (F)	P		20% yam bean dust less effective than 0.3% rotenone.
Pyrophyllite	Pea weevil	Idaho	N		35% yam bean.
Magnesium oxide	do.	do.	N		35% yam bean.
207. Yellow jessamine root powder (Gelsemium sempervirens)	Tobacco hornworm	Fla.	N		Dust.
208. Zinc arsenate plus pyrophyllite	Potato flea beetles	Wash.	P		25% strength caused slight foliage injury.
209. Zinc arsenite plus pyrophyllite	do.	Wash. (F)	VP		25% strength did not cause foliage injury.
Zinc arsenite plus bordeaux	do.	do.	P		Spray 6 lbs. to 100 gal. bordeaux.
210. Zinc oxide	do.	do.	N		Used with equal parts of pyrophyllite.
Do.	Pea weevil	Oreg.	N		Caused mortality by contact probably from dessication when used in large dosages.
211. E-2376	Red spiders	Md.	I		Spray 4 lbs. per 100 gal. water caused injury.
Do.	Citrus mealybug	do.	I		Do.
212. E-2426	do.	do.	I		Do.
Do.	Red spiders	do.	I		Do.
213. E-2437	Mexican bean beetle	Ohio	N		Dust mixed with equal parts of pyrophyllite.
Do.	Tomato fruitworm	do.	N		Do.
214. E-2447	Mexican bean beetle	Ohio	N		Do.
Do.	Tomato fruitworm	do.	N		Do.
215. E-2473	Tomato fruitworm	Ohio	N		Dust mixed with equal parts of pyrophyllite.
Do.	Mexican bean beetle	do.	N		Do.
216. E-2474	do.	do.	N		Do.
Do.	Tomato fruitworm	do.	N		Do.
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